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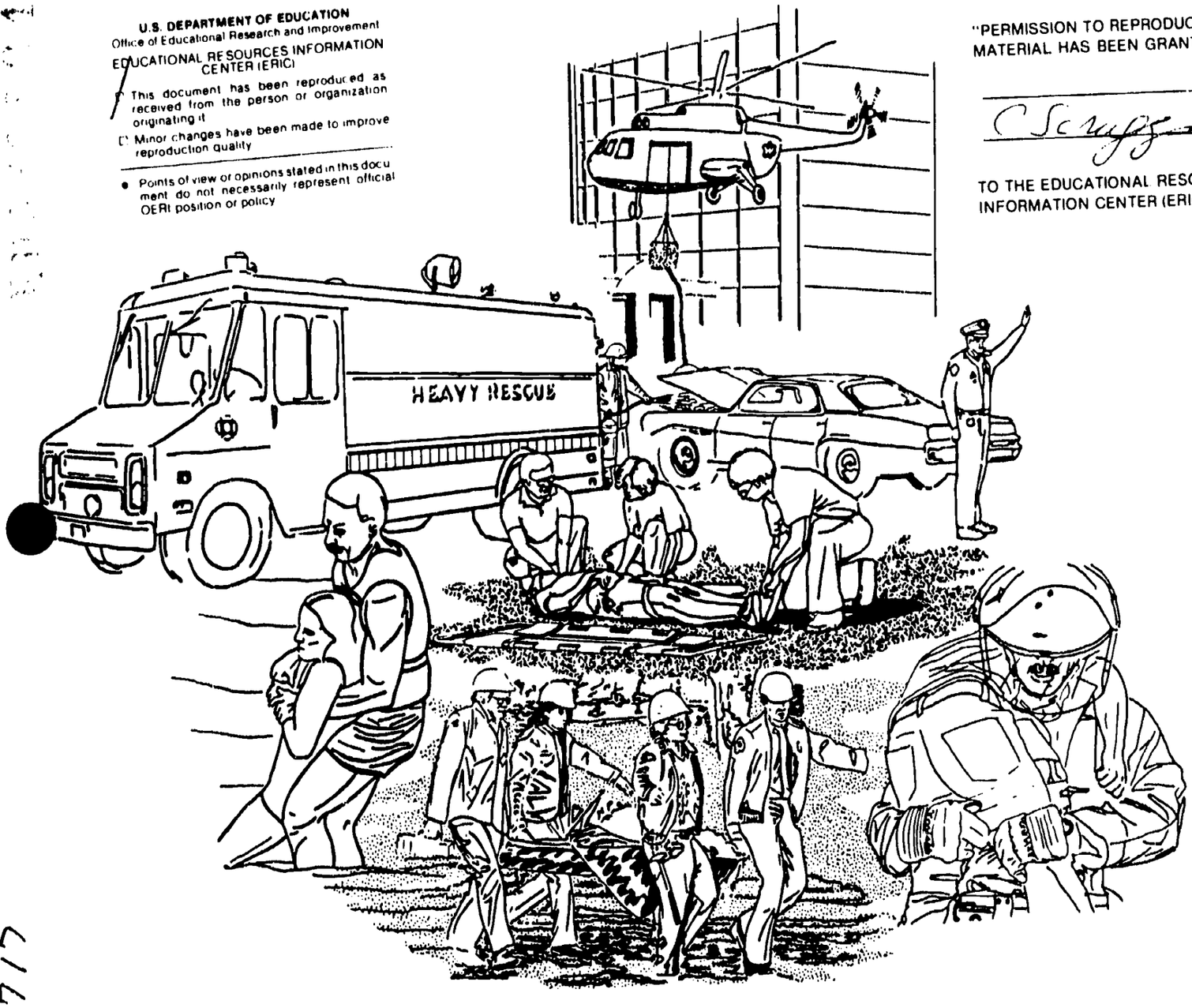
ABSTRACT

This learner manual for rescuers covers the current techniques or practices required in the rescue service. The 10th of 10 modules contains a 16-page glossary of rescue terms and 3 appendices: (1) 4 computer programs and 32 other technical assistance materials available for hazardous materials; (2) hazardous materials resources--60 phone numbers, 10 Environmental Protection Agency regional offices and telephone numbers, and the 10 U.S. Department of Labor regional offices of Occupational Safety and Health Administration; and (3) 112 hazardous materials reference sources and books. (NLA

RESCUE MANUAL



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MODULE 10

Glossary

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INSTRUCTIONAL MATERIALS LABORATORY
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Rescue operations may subject both rescuer and victim to the possibility of injury or death. Rescuers must understand the nature and effect of each rescue technique, and practice techniques regularly, using this text to enhance their learning. The materials and information presented here are intended only as a learning aid, and are no substitute for training. Expert opinions, recommendations, and guidelines change as research and experience refine procedures. This text includes the most up-to-date information from rescuers working in the field.

Specialized procedures require demonstration and training by subject-matter experts. It is not likely that a rescuer will become proficient in all rescue operations. Most rescuers develop proficiency in only a few areas but may be familiar with several others.

This text suggests procedures and explains how to do them. The techniques given are guidelines only. Each department should incorporate its own procedures and address local needs.

RESCUE MANUAL

INSTRUCTIONAL MATERIALS LABORATORY
THE OHIO STATE UNIVERSITY
COLUMBUS, OHIO 43210

FOREWORD

The intent of this manual for rescuers is to provide the latest instructional content and serve as an up-to-date, comprehensive source of information covering the current techniques or practices required in the rescue service. To help in this endeavor, an instructor's manual has been developed to be used in conjunction with this learner's manual. The manual has been produced in a series of modules to facilitate future revisions more rapidly and cost effectively.

The instructor's manual follows the key points identified in the text. Chapters have been included in the text which exceed those printed in any other resource. These include managing and operating the emergency vehicle, rope rescue techniques, industrial rescue, farm accident rescue, and various water emergency procedures, among others.

That the rescue profession is a dangerous and challenging career is a recognized fact. It is our hope that this text will help the rescuer meet the challenges of the rescue service in a safe and professional manner.

Tom Hindes
Director
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PREFACE

The Ohio State University Instructional Materials Laboratory has played a major role in the training of public safety personnel through the development of text materials for many years. Due to the advances in the rescue techniques, it became apparent that the existing te' ' was obsolete. Upon the advice of many knowlegeable people in the rescue service, the Instructional Materials Laboratory initiated the development of a new text that would be easily updated, and address the needs of the rescuer. To this end, an editorial review board representing a broad spectrum of individuals in the various phases of the research profession was convened to determine what topics this text should address. The culmination of this effort is the Rescue Manual. It is hoped that this text will be useful to not only the new rescuer but will serve as a reference source for the experienced rescuer.

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MODULE 10

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GLOSSARY FOR THE RESCUE MANUAL

The following terms and definitions have been included to assist the reader in understanding a term as it applies to rescue techniques.

A-FRAME: A temporary A-shaped structure used to position ropes near an edge or above an obstruction.

ACCESSORY CORD: Cordage (rope) made from nylon, Spectra, or Kevlar fibers used for any number of purposes. Any cord smaller than 9 is considered an accessory cord.

AFLOAT: On the water.

AFT: Describing the after section of a vessel or things to the rear of amidship and near the stern.

AID or AID CLIMBING: To climb by means of aid leaning, standing, or pulling on the rope or anchors in order for the climber to rest or make progress, as opposed to free-form climbing.

AIR BOAT: A power boat using an aircraft-type with the propeller mounted above the waterline.

AIRWAY: The route for passage of air into and out of the lungs.

ALCOHOL FOAM: An extinguishing agent used to extinguish a fire involving polar solvents.

ANCHOR: Any means of attaching a rope to an object. It may be a natural anchor such as a tree or chockstone, or an artificial anchor placed by the rescuer, such as a bolt or an anchoring device.

ANCHOR ANGLE: The angle created between two individual anchors; where they join together to form a main attachment point.

ANCHOR ICE: Formed when the river bottom cools to 32° and ice forms on solid objects. As sun-warmed objects release anchor ice, an ice jam can occur.

ANCHORING DEVICE: A term used in rope rescue that refers to all rock anchors, both passive and active. Bolts and related hardware are included in this group.

ANVIL: \'an-vəl\ The outer-most portion of a piton which is hit with the hammer.

APPARATUS: A motor-driven fire truck or a collective group of such trucks which may be of different types such as pumper trucks, ladder trucks, etc.

ARETE: \ə-'rāt\ A sharp, narrow ridge or crest of a mountain. Can refer to a sharp ridge which runs from top to bottom (vertically) on a rock face. Opposite of dihedral.

ASCENDER: \ə-'sen-dər\ A broad term given both metallic camming devices which grip a rope in one direction (hard ascender) or specific rope hitches (soft ascenders) which grip the rope in one or both directions.

ASPHYXIA: \as-'fik-sē-ə\ Suffocation.

ATTENDANT: The rescuer who accompanies the victim in a high-angle (vertical), highline, or pendulum evacuation. In a flat, low, or steep-angle evacuation, these rescuers are called bearers or tenders.

AXIAL: (see IN-LINE)

BHT: Butylated hydroxytoluene.

"B" LINE: Called the "barf line" in a high-angle (vertical), supine evacuation; it allows the attendant to elevate the victim and position sideways (log roll) to clear the airway in case of vomiting.

BABY ANGLE: (Slang) Type of small piton (generally 1/2") that can be hammered into a 3/8" by 2-1/2" hole in soft stone. It is usually permanent if used like a bolt placement.

BACHMANN HITCH: \'bach'man 'hich\ A type of soft ascender that works well in only one direction and employs a standard carabineer.

BACKBOARD: Board used to transport victim who should be kept immobile.

BACK-UP: Refers to a step done to double-up a rope-rescue system knot or anchor.

BACKWASH: Water current in a hydraulic moving from the boil line upstream to the face of the dam.

BALE HOOKS: \'bā(ə)l 'hůks\ A hand tool used to grab bales of hay, etc. more quickly and easily than with the use of the hands only.

BECKET: The hole in the center plate of a double pulley that is opposite the main attachment holes.

BECKET BEND: A knot used to tie two ropes of unequal size together. Also known as sheet bend.

BELAY: \bi-'lā\ Any means of checking a falling climber or failed system by using a second rope. A person monitoring the second rope is called the belayer.

BELAY CHAIN: \bi-'lā 'chān\ The belay chain consists of (in order) the anchor, the means of attaching the belayer to the anchor, the belayer's stance, body, hands, and any arrangements to control the rope, the rope itself, intermediate protection points, how the ropes are tied in to the climber, and the climber's body.

BELAY DEVICE: \bi-'lā di-'vīs\ A specialized piece of equipment made for belaying. Examples include: The small end of the figure-eight ring, sticht plate, carabineer (for Munter hitch), or belay plate.

BELAY LINE: \bi-'lā 'līn\ The rope designated in a rope-rescue evacuation whether low, steep, or high-angle (vertical). Its counterpart is the working or main rope.

BELAY SEAT: \bi-'lā 'sēt\ A small fabric seat sling used to sit when there is no ledge from which to render or belay.

BELAY STANCE: \bi-'lā 'stan(t)s\ An attentive stance with both feet in a planted position and the belayer is ready for the unexpected.

BEND: A knot by which one rope is fastened to another or some object ie: falling rock.

BIGHT: A U-shaped bend in a rope.

BILGE: \'bilj\ The lower internal part of a boat hull.

BLEEDER VALVE: A valve on a tank used to bleed the lines on an air tank.

BLOCK CREEL: Method used by rope manufacturers to ensure that the rope filaments are constructed continuously for the entire length of the rope and not spliced.

BOIL LINE: Upwelling in a hydraulic where recirculating upstream current separates from the outflowing current.

BOMBPROOF: Refers to the reliability of an object to which something is anchored. A large tree or boulder is considered bombproof and negates the need for backup. Also means that something is anchored securely.

BONG: A large-angle piton.

BOTTOM BELAY: A "pseudo" belay rendered to a person rappelling by having another pull on the bottom of the rappel rope. Also called a military belay.

BOW: The forward part of the boat.

BOWLINE KNOT: Sometimes called the king of knots; a versatile knot used to form a loop that will not slip and is easily untied. It must always be backed up.

BOWLINE-ON-A-BIGHT: Two-loop bowline.

BRAKE BAR: A frame made of hollow steel or solid aluminum and used in conjunction with other bars through which the rope passed to add friction.

BRAKE HAND: The hand (opposite the feeling hand) which grasps the rope as it comes directly from the waist (as in hip belay) or when using a belay device to control a descent.

BRAKEMAN: A rescuer in charge of the controlling descent of litter.

BRAKE PLATE: A friction device constructed of hard alloy aluminum and used in a technical evacuation during a two-rope lower.

BRAKING DISTANCE: The distance a vehicle travels after the first retardation by application of the brakes and the point where vehicle motion ceases.

BREACH: A gap in a wall made by battering.

BUFFERS: A device located in an elevator pit that is designed to halt a fully-loaded car running at a normal rate of speed.

BUTTERFLY COIL: A method of coiling a rope so that it can be carried on one's back.

BUTTERFLY KNOT: A knot tied in the middle of a rope suited for loading from three directions; both tails and the loop formed by the knot.

CERCLA: Comprehensive Environmental Response Compensation, and Liability Act.

CFR: Code of Federal Regulations

CFS: (Cubic feet per second) The volume of water flowing past any point on a river bend.

CPR: Cardiopulmonary resuscitation.

CACHE: \'kash\ The equipment room reserved for rope-rescue gear and the rope.

CAMALOT: A two-axle, four-cam spring-loaded camming device with a flexible shaft.

CAM LOCK: A type of camming passive chock.

CANDLE ICE: Ice fingers in a rotting or disintegrating surface; it appears honeycombed or resembles many candies bundled together and is commonly found in the late winter or early spring.

CAPSIZE: To turn over.

CARABINEER: \ˌkar-ə-'bē-nər\ A metallic link with a gate that permits insertion of the rope or runner; Carabineers come in different configurations, in either nonlocking or locking style. Also called a biner.

CARABINEER BRAKE: \ˌkar-ə-'bē-nər 'brāk\ A friction-producing device made from three or more carabineers attached to the rope assembly; used mainly for rappelling and usually preferred to the body rappel. Also called a six-carabineer brake when a total of six carabineer positions are used.

CARABINEER JAM: \ˌkar-ə-'bē-nər 'jam\ A means of clipping a carabineer through a loop-end to secure it the same as with a tie-off.

CARBON DIOXIDE (CO2): An odorless, colorless gas resulting from the oxidation of carbon. A smothering agent used on class B and C fires is carbon dioxide as a gas.

CARBON MONOXIDE (CO): A colorless poisonous gas formed by burning carbon or organic fuels with a scant supply of oxygen.

CARDIAC: Pertaining to the heart.

CARDIOVASCULAR: \'kärd-ē-ō-'vas-kyə-lər\ Pertaining to the heart and blood vessels.

CARRIAGE: A system of pulleys (or carabineers) which moves across the trackline in a given highline.

CARRY-OUT: Refers to the act of carrying a victim on a flat or semi-flat trail system requiring little, if any, route-finding.

CARRY SLING: Indicates a method of carrying a litter and victim using only six rescuers to bear the weight. The weight of the litter is supported by webbing runners.

CASE-HARDEN STEEL: A process used to harden a ferrous alloy so that the surface layer is harder that the interior.

CATERPILLAR PASS: The act of passing the victim in a litter through a rough obstructed passage by having the bearers rotate positions.

CERVICAL SPINE (C-SPINE) IMMOBILIZATION: To immobilize the head and neck area.

CHEMICAL FERMENTATION: The decomposition of chemicals.

CHIMNEY: A rock-opening wide enough to accommodate a climber's body.

CHIMNEY HITCH: A type of knot used to tighten a rope when it is secured between two objects. It may be used to secure a ladder or to set up a rope for crowd control.

CHOCK: An artificial anchor consisting of a piece of metal or other rigid material that is fitted with a rope sling or wire cable for attaching a carabineer and the rope. An example of a chock is a stopper or hexcentric.

CHOCKSTONE: A stone lodged in a crack or chimney.

CIRCULAR SEARCH PATTERN: A search pattern revolving around a central point where the search begins and increases the radius with each revolution, thus increasing the search area each time.

CIRCULATORY: \'sər-kyə-lə-tōr-ē\ Pertaining to body circulation.

CLEAR ICE: New ice formed during a long hard freeze that can be blue, green, or black due to the color of the water seen through the ice; the strongest ice formed.

CLIMBING ROPE: A rope designed for free climbing whereby the energy of a leader-fall is absorbed by the strength of the rope. Also called a dynamic or high-stretch rope.

CLIP-IN: Refers to physically clipping into a carabineer as a safety precaution against falling.

CLOVE-HITCH: A knot used to temporarily fasten a rope to a post, tree, or pole.

CONFLUENCE: \'kän-ˌflü-ən(t)s\ The junction where two or more bodies of water meet.

CONTROL: A knowledgeable rescuer who acts as the center for all communication and runs the operation once approval has been given for the setup.

COPPERHEAD: A small, wired chock that employs a soft copper swage.

CORE: The inner filaments in a kermantle rope; usually white so that a break in the sheath is visible.

CRITIQUE: \Krə-'tēk\ A review of an incident designed to analyze the events that occurred while dealing with the situation.

CROSSWIND: Wind blowing across line of travel.

CURRENT: The movement of the water in a horizontal direction.

CURRENT DIFFERENTIALS: Currents of different speeds and/or directions existing side-by-side in a river.

CYLINDER: A tank or container.

CYLINDER VALVE: The valve on a cylinder that is used when filling an air tank.

D-CARABINEER: A D-shaped carabineer that aligns its load along the nongate side.

DOI: Department of Interior.

DOT: Department of Transportation.

DAM FACE: Downstream vertical side of a dam.

DEFENSIVE BOATING: Maneuvering a boat at a speed slower than the river allowing more time to react to hazards.

DEPTH SOUNDER: A sonar device utilizing sound-waves to determine water depth.

DESCENDING DEVICE: A metallic piece of hardware designed to create friction as needed in a rappel or lowering procedure.

DETERGENT FOAM: Agent used to suppress a class B fire.

DIHEDRAL: \(')dī-'hē-drəl\ A configuration of rock where two faces or walls come together.

DIRECTIONAL ANCHOR: A turning point for the belay or working rope.

DIRECTIONAL FIGURE-EIGHT KNOT: A midline knot suited for pulling in one direction along one of the ropes coming into the knot.

DIRECTION OF PULL: The direction in which a load will fall, whether actual or anticipated.

DOUBLE BOWLINE KNOT: A bowline knot that is backed up with a carabineer jam.

DOUBLE FISHERMAN'S BEND: A strong bend used for tieing two rope together; difficult to untie after being loaded.

DOUBLE PULLEY: A pulley with two independent wheels divided by a center plate.

DOUBLE-ROPE RAPPEL: A rappel using two ropes which provides more friction at the descending device.

DOWNCLIMB: The act of climbing down following the same pattern used in climbing up.

DOWNSTREAM: Direction from which a river flows.

DOWNSTREAM "V": Smooth pattern of water formed in the shape of a downstream"V"; marks the deepest and clearest channel.

DRAGGING: A search method which involves pulling grappling hooks underwater in a search pattern.

DRIFT ICE: Free-floating (flotation ice) ice that is not attached to the shore.

DROOPING HIGHLINE: A highline system where the trackline can be slackened to lower

the rescuer to make contact with or pick-up a victim.

DROP TEST: A test under controlled conditions used to simulate the fall and arrest of a climbing or rescue load.

DRY SUIT: A type of protective clothing designed to keep the wearer dry in an aquatic environment.

DYNAMIC BELAY: \dī-'nam-ik bi-'lā\ A belay method which allows the rope to slip through the belayer's hands thus absorbing energy.

DYNAMOMETER: \ˌdī-nə-'mäm-ətər\ A mechanical device used to measure force.

DYSPNEA: \'dis(p)-nē-ə\ Difficulty in breathing.

EMA: Emergency Management Agency.

EPI: Emergency Public Information.

EARS: The protrusions on some figure-eight rings.

EBB: An outgoing tide.

EDDY: \'ed-ē\ An upstream current created when water is diverted around a solid object, i.e. downstream side of boulders, bridge piers, etc.

EDDY TURN: \'ed-ē 'tərn\ A maneuver used by a boater to enter an eddy.

EDGEMAN: A rescuer assigned to push out on the litter during the critical time of negotiating the edge in a high-angle evacuation.

EDGE PROTECTION: Any means of protecting a rope from abrasion as it passes over an edge.

EDGE ROLLER: A piece of equipment designed to protect a rope from an edge.

ELECTRICAL HEAT ENERGY: Heat formed by molecules in motion; resistance heating, dielectric heating, induction heating, leakage current heating, heat from arcing, static electrical heating, and heat generated by lighting.

ELONGATION: \(ˌ)ē-ˌlȯŋ-'gā-shən\ The amount of stretch a rope yields; usually noted as a percentage.

EMERGENCY OPERATION PLAN: A preplan that treats emergency management activities generically and can be used for a multitude of hazards, disasters, or emergencies.

"EMERGENCY READINESS": Means that a community is prepared to act promptly to save lives and property if threatened or hit by a disaster or major emergency.

ENGLISH REEVE: A system generally used on level or nearly level highlines that allows a load to be raised or lowered to any position along the trackline(s).

ESCAPE ROUTE: The nonareated water flowing under the backwash of the hydraulic and continuing directly downstream.

ETRIER: A 4' to 5' ladder composed of webbing. (French for stirrup).

EXPANDING SQUARE: A type of search pattern that works in a square design; the legs expand after each inner square is completed.

EXPLOSIVE LIMITS (EXPLOSIVE RANGE): Varies with the fuel and ambient temperature. Generally it is the lower and upper limits in which vapors of a substance, when mixed with air, will ignite and burn or deflagrate.

EXPOSURE SUIT: An insulated, buoyant suit worn to protect the body from hypothermia.

EYE: The hole in a piton to which a carabineer is clipped.

FAA: Federal aviation administration.

FACE: A relatively unbroken or plain expanse of rock between ridges or crack systems.

FACE OF A WAVE: An upstream or downstream side of a wave.

FALL FACTOR: Calculated by dividing the distance a victim attached to the rope will fall by the length of the rope between the victim and the rope's anchor or belay.

FALL LINE: Indicates the natural fall angle down a steep embankment.

FEELING HAND: The opposite hand from the brake hand in a belay or a rappel.

FERRYING: A maneuver by which a boater crosses from one side of the river to the other without being swept downstream.

FIGURE-EIGHT BEND: A bend for joining two ropes that ties in follow-through fashion; also called figure-eight follow through or flemish bend.

FIGURE-EIGHT KNOT: A strong endline knot tied in on-the-bight or in follow-through fashion.

FIGURE-EIGHT RING: A popular descending/lowering device that twists the rope, and sometimes causes rope salads when used as a lowering device.

FLAG or FLAGGING: Fireline tape or surveyor tape used to secure a scene or for a follow-up route to find a remote area.

FLAT CARRY: A method of carrying a victim in a litter by means of six bearers.

FLOE ICE: \'flō'Is\ Any relatively flat piece of ice 10' in diameter or larger in diameter. A floe may consist of a single, unbroken piece of ice or many combined fragments.

FOAM NOZZLES: Foam application device.

FORMALDEHYDE: \'fȯr-'mal-də-ˌhīd\ A powerful disinfecting gas, when mixed with water, can be used as a preservative; also used as an antiseptic and astringent.

FRAZIL ICE: \'fraz-əl 'Is\ The first type of ice to form; composed of disk- shaped crystals suspended in the water. The crystals form a thin, oily, or opaque-looking film that floats to the surface. As the temperature drops, crystals clump together to form a solid sheet of ice.

FRAZIL SLUSH: Soft ice crystals that form in moving water where the water current prevents a solid freeze.

FREE CLIMB: Climbing which involves using only the holds that a rock itself provides.

FREE RAPPEL: A rappel down an overhanging wall where the rappeller is hanging in space free of the wall.

FRIEND: A brand name of single axle four cam spring loaded camming device that works well in sandstone with sizes ranging from 3/4" to 4".

FROST KNOT: A knot used in webbing to make the top loop in a set of tied etriers; usually located where the carabineer is attached.

GATE: A part of a carabineer that admits other ropes or equipment; may be spring-loaded.

GIBBS: A brand name of a hard ascender that works well on iced or muddy ropes.

GIRTH HITCH: \'gərth 'hich\ A tied runner wrapped around an object and through itself to form an anchor.

GRAPH RECORDER: An electronic device that displays water depth and objects under the surface.

GRAPPLING HOOK: A set of hooks designed to use under water to snag a person or object that cannot be seen.

GUNWALE: The top edge of the sides of a watercraft.

HALF-SHEEP SHANK: Half-hitch around a bight; principle use is to connect two objects. Example: to rope off an area.

HAND-OVER-HAND: The simplest means of extricating a victim up an incline.

HANGER: The metal piece attached to a bolt so that a carabineer can be attached.

HANGING BELAY: A belay given from a shear vertical face where there is no ledge on which to stand.

HANSEN HARNESS: An improvised full harness used for nontechnical evacuation of an uninjured or slightly injured victim.

HARD ASCENDER: A metallic camming device that allows the rope to pass in only one direction; hard ascenders are designed for use with one rope only, and for only personal body weight.

HARNESS: An arrangement of cloth straps that secure the rope to a rescuer's body and serve to distribute body weight, or the impact force of a fall; provides greater safety and comfort.

HAZARDOUS MATERIALS: Any substance that causes or may cause adverse affects of the health of safety of employees, the general public, or the environment; any biological agent and other disease-causing agent, or a waste or a combination of wastes.

HEADLAMP: A battery-operated light that affixes to either a helmet or rescuer's head.

HEDDEN HITCH: (KREUZKLEM HITCH): A type of soft ascender; a simple figure-eight tied over and around the rope; easy to loosen after the load has been removed.

HELMET: A type of helmet that is able to withstand impact from all sides, particularly on top, such as a fire fighter's helmet, climbing helmet or motorcycle helmet.

HERO LOOP: A small loop of webbing (usually 2") girth or clove hitched onto the shaft of a piton or other anchoring device to lessen the torque.

HIGH DAM: A dam that pools water creating a reservoir.

HIGH EXPANSION FOAM: Used to fight indoor fires; mixed with air and 2% solution to form high-air content.

HIGHLINE: A rope or ropes pulled tight across a chasm or river to facilitate the passage of rescuers, a victim, or equipment back and forth. The main fixed ropes are called tracklines. Those used to move the load across are called taglines.

HITCH: Where a rope is tied to an object (pole, post, rope, cable, carabineer, etc.) so that if the object is removed the hitch falls apart. Example: clove hitch, Munter hitch, load-releasing hitch, Prusik hitch.

HOIST ROPE: That rope having an ascender attached to it.

HOISTWAY: Vertical shaft in which an elevator travels.

HORN: A projecting piece of rock which may serve as a natural anchor.

HUMAN CHAIN: A search pattern which uses a line of people, holding hands, walking through shallow water, sweeping the bottom with their feet.

HYDRAULIC: Recirculating movement of water created when water flows over a rock or ledge, i.e. lowhead dams, boulders, natural ledges. Also referred to as a hole.

HYDROGEN CHLORIDE: Colorless irritant to the eyes and respiratory tract; commonly found in plastic fires.

HYDROGEN CYANIDE: \'hī-drə-jən 'sī-ə-ˌnīd\ An extremely poisonous colorless liquid or gas (HCN) used as a rodenticide and insecticide; can cause tachypnea, dyspnea, paralysis, and respiratory arrest.

HYDROSTATIC DATE: \'hī-drə-'stat-ik 'dāt\ The date that a Self Contained Breathing Apparatus (SCBA) cylinder should have a hydrostatic test performed.

HYDROSTATIC TEST: \'hī-drə-'stat-ik 'test\ A test performed on SCBA cylinders (usually every five years) that checks the height of the fluid in the cylinder.

HYPOTHERMIA: \'hī-pō-'thər-mē-ə\ A condition in which body heat is lost quicker than it can be regenerated.

ICE AWL: A hand-held tool with a handle and a metal point that is used to grip the ice.

ICE CRACK: Fracture in the ice that has not separated.

ICE RECOVERY: A body recovery involving ice.

ICE RESCUE: Assisting a live victim to safety from the ice.

ICE RIND: A brittle, shiny crust of ice formed on a quiet surface; easily broken by the wind or waves.

ICE STAFF: A long pole used to tap the ice surface to determine ice thickness or can be used in an ice rescue.

INCIDENT COMMANDER: Person directly in charge of managing any emergency operation.

INCIDENT REPORT: Provides critical information from the legal viewpoint.

IN-LINE (AXIAL): Refers to the litter victim position which is parallel to the working/belay line(s).

INNER VAPOR TRANSMISSION
Layer of clothing closest to the skin which transports moisture to outer layers of clothing.

INSPECTION: Visual examination of wear factors, "running" the rope, maintenance and storage condition of equipment, rope, cordage; often includes written log or record.

INTERLOCK DEVICE: Electro-mechanical device that locks elevator hoistway doors and

prevents them from opening when the elevator is not at the landing.

INTRAVENOUS THERAPY: Therapy within the veins.

ISOTHERMIC: \'ī-sə-ˌthərm-ik\ The temperature at which water begins to change from a fluid to a solid, 39.2°F.

JIGGER: A small pulley system used for a variety of tasks such as aligning loaded directional anchors.

JUG: (slang) The term used to describe the physical act of ascending with hard ascenders.

JUMAR: A brand of a hard ascender constructed from cast aluminum alloy.

KERMANTLE: Describes the construction of rope usually used for climbing or rescue; consists of a woven sheath (mantle) over a core (kern) of braided, block creel filaments.

'KEVLAR': Brand name of a usually tough and strong Aramid fiber accessory cord.

KILOGRAM: The standard of mass (strength) used on most climbing equipment, particularly carabineers, to indicate its expected strength according to the manufacturer; 1 Kilogram equals 2.2 pounds.

KLEMHEIST HITCH: A type of soft ascender formed by wrapping the sling rope around the rope and then feeding it back through itself.

KNIFEBLADE: A type of piton which is intended for insertion in extremely small paper-thin cracks in rock.

KNOT: To tie a rope to an object or to form a point of attachment (tied on a bight or loop), excluding hitches, bends, or splices; also used as a generic term covering the whole subject of rope tying.

KNOT-PASSING PULLEY: A wide-throat pulley designed to allow a bulky knot to pass.

KOOTENAY CARRIAGE: A large throat (sheave) pulley developed for specific highline work. The sheave may be fixed by removable pins for the purpose of using the pulley for a full-strength tie off (tensionless anchor).

LEL: Lower Explosive Limit.

LZ: Helicopter landing zone.

LAID ROPE: A rope consisting of bundles of fibers called strands that are twisted or laid around one another. Usually three strands are oppositely twisted into the finished rope. Laid ropes are extremely dynamic and not recommended for rescue work.

LARGE ANGLE: A type of angle piton.

LAYERED ICE: Ice formed from many layers of frozen or refrozen snow. It has a striped appearance.

LAYERING: A method of dressing that uses an inner vapor transmission layer, middle insulating layer, and outer protective layer.

LEAD: (noun) A fracture in the ice that makes it navigable by surface vehicles.

LEAD: (verb) To climb first, taking the rope up and place anchors, as distinguished from SECOND climber.

LEADER: 1) The FIRST climber who "leads" a pitch as distinguished from the SECOND. 2) The most knowledgeable person performing problem-solving tasks for the CONTROL and who gives approval prior to an operation being set into motion.

LEE: The side opposite to that from which the wind blows.

LEEWARD: Situated on the side turned away from the wind; opposite of windward.

LIFELINE: Human weight-bearing line (rope).

LITTER: The rigid vehicle by which a victim is transported, generally in a supine position; victim should always be tied in.

LITTER SHIELD: A covering used over the neck and head, and attached to the litter by a hinged mechanism allowing it to be swung out of the way to protect the victim from falling rock.

LITTER WHEEL: A large, wide wheel which temporarily attaches to the bottom of a litter as an aid when carrying a victim through a narrow trail where a standard six- or four-bearer carry is not possible.

LOCKING CARABINEER: A carabineer whereby the gate can be screwed shut so that a

rope or device placed within it and cannot be accidentally removed until it is disengaged; also called a locker.

LOCK-OFF: The act of positioning the rope in a lowering or belay tc secure it from advancing.

LONG-TAIL BOWLINE: A bowline with a small loop placed part way up the rope so that the long tail can be carried on to other attachments (people, anchors, etc.)

LOOP: A full turn of a rope which crosses itself and forms a loop in the rope.

LOST ARROW: A type of blade piton.

LOW-ANGLE EVACUATION: Nontechnical evacuation where the terrain is gently sloping and a lowering/belay rope is needed.

LOWERING: The act of removing a victim downward on steep or high-angle terrain using a lowering (friction) device.

LOWHEAD DAM: A manmade structure that is constructed to hold water at the end of a extends bank to bank less than 25' high.

MRA: Mountain Rescue Association

MSDS: Material Safety Data Sheets.

MSHA: Mine Safety Health Administration.

MAINLINE VALVE: A main valve on an air tank line used with a self-contained breathing apparatus.

MANAGE: To "manage" a rope, refers to a rescuer physically handling a rope to render it free of kinks or knots before it enters a pulley, friction device, or belay device.

MANIFOLD VALVE: Used on air tanks to crack the line or blow out the fill-line when filling a tank.

MARINERS HITCH: A type of load release hitch which uses flat material.

MASK (SCBA): Covers mouth and nose and is part of the whole breathing apparatus which contains breathable air.

MECHANICAL ADVANTAGE: A system using pulleys with ascenders to give a greater pull during a raising operation given limitations of space and manpower. Also used to tighten a trackline in a highline.

MICROORGANISMS: \ ' mī - krō - ' ȯr - gə - ˌ niz - əm (s) \ A minute living organism usually microscopic; includes bacteria, rickettsiae, viruses, molds, yeast, and protozoa.

MIDDLE INSULATING LAYER: A bulky layer of clothing which provides primary insulation.

MIDSHIP: Describing the midsection of a vessel.

MILITARY MARKINGS: Meant to alert potential responders to hazards similar to the NFiPA 704 System. Applies to transportation systems as well as fixed sites.

MILLIMETER(mm): A metric measurement indicating rope diameter for most climbing (dynamic) ropes and accessory cordage.

MOUNTAINEER'S COIL: A method of coiling a rope. Once finished, and whipped, it is usually carried about the shoulder and across the chest.

MOW: Used for storing hay.

MULTI-POINT: A number of anchor points, (natural or artificial) that are joined together. In case one fails the remaining anchors hold the load. No anchor used in a multi-point may be marginal since the system is not self-equalized.

MUNTER HITCH: A method of hitching a rope around a large carabineer (or 'pearabiner') for belaying purposes. Sometimes used for belaying a rescue load because it renders a static belay; also called an italian hitch.

NASAR: National Association of Search and Rescue.

NFiPA 704 MARKING SYSTEM: Identifies hazards of materials in three categories: health, flammability, and reactivity at warehouses and fixed tank-type facilities.

- **HEALTH:** Blue background located on left middle quadrant; describes potential danger to personnel.
- **FLAMMABILITY:** Red background located in upper quadrant; indicates degree of hazards which are rated with their susceptibility to burn.
- **REACTIVITY:** Yellow background located in right middle quadrant; Indicates relative degree of hazard ranked according to ease, rate, and quantity of energy release.

NFPA: National Fire Protection Association.

NFPA STANDARDS: Standards set by National Fire Protection Association.

NIOSH: National Institute of Occupational Safety and Health.

NOAA: National Oceanic and Atmospheric Administration.

NAIL: To aid a crack by the placing of pitons.

NATURAL ANCHORS: Object used as an anchor which is not placed by the rescuer such as an artificial anchor, a tree, guardrail, or utility pole are examples of natural anchors.

NESTING: If the pitons available on a rack do not fit a given crack, two or three pitons may be driven together in a crack. Blades are "nested", one on top of each other; angles are "stacked", one on top of each other.

NITROGEN OXIDES: Two dangerous oxides: nitrogen dioxide and nitric oxide. Nitrogen dioxide is a pulmonary irritant that causes suffocation. Nitric oxide changes to nitrogen dioxide in the presence of moisture and oxygen.

NUT TOOL: A slender metallic device used by a climber to clean artificial anchors or chocks from rock cracks.

OSHA: Occupational Safety and Health Act.

OAR: A long, wooden instrument with a flat blade at one end, used to propel a boat.

OFFENSIVE BOATING: Maneuvering a boat at a speed faster than the river current.

OFFSET BLADE: A type of blade piton.

OFF-WIDTH: A crack too wide for a normal foot jam and too narrow to admit the climber's body.

OPPOSITION: An anchoring system where one anchor pulls opposite from the other. They both work together to maintain a proper direction of pull to their respective placements.

ORGANISM: An individual living thing whether animal or plant.

ORIFICE: \'ȯr-ə-fəs\ The opening of a welding torch.

OUTER PROTECTIVE LAYER: The outermost layer of clothing which protects against wind and water.

OUTFLOW: Water current in a hydraulic moving downstream from the boil line.

OUT OF PLUMB: Not true according to a plumb line; perpendicular; vertical.

OVAL: Refers to the shape of a type of carabineer; work well in rescue procedures because they are easy to use to set up brake systems. An oval carabineer is not quite as strong as a "D" carabineer but are more versatile.

OVERHAND BEND: A compact knot used for joining two ends of rope as in tying a runner, a sling on a chock, or a Prusik loop; also called a ring bend.

OVERHAND SLIP KNOT: A special knot for hitching an object that usually stays tighter than a simple girth hitch.

OXIDATION: Combining or causing to combine with oxygen; to remove hydrogen.

OXYGEN: A gaseous element existing free in the air and in combination in most nonelementary solids, liquids, and gases.

PFD: A personal flotation device that must be U.S. Coast Guard approved (Types I-V), that must be the proper size and proper design for a specific type of water activity.

PPM: Parts per million, volume measurement of gas concentration.

PSAR: Preventative search and rescue.

PANCAKE ICE: Circular piece of newly formed free-floating ice. It is approximately ten feet in diameter and up to 4" thick. It is relatively flat with raised edges caused by pieces of ice striking against one another.

PASSIVE PROTECTION: Any anchoring device (chock) which does not have mechanical or moving parts; examples: hexcentrics, stoppers, and tricams available in either wired or slung fashion.

PATIENT HELMET: A helmet worn by the victim during an evacuation procedure. The helmet should have a face shield and chin strap.

PATIENT TIE-IN: A means of securing a victim for supine or in-line.

PEEL OUT: A maneuver a boater may use to enter the main current.

PENBERTHY HITCH: \'pen-'pərth-ē 'hich\ A type of soft ascender consisting of a single short length of rope wrapped around another rope. The short rope is tied off with a sheep bend, and then both ends are tied off with a follow-through or double fisherman's bend.

PENDULUM: \'pen-jə-ləm\ A controlled swing with belays that provide a margin of safety; two types of pendulums include the double system and the three-tail system. The double system is good for a single-swing pendulum, and the three-tail system is good for moving across snow slopes or rock faces.

PIGGYBACK RIG: A pulley system used for a raising operation. The "piggyback" refers to a pulley system pulling an identical pulley system. An example is a 4:1 system where a 2:1 system is pulling on another 2:1. A pig rig is considered compound pulley system.

PIKE POLE: A long pole with a point and hook on one end; used to reach, grab, or probe an underwater area.

PILLOW: Mound of water visible on the surface of a river caused by an object lying just below the water's surface.

PITCH: A section of a climb between two belay stances; often determined by the length of the climbing rope.

PITON: \'pē-ˌtän\ An artificial anchor consisting of a metal spike which is driven into a crack in a rock with a hammer; has an eye for attaching a carabineer and a rope. Pitons come in two types: (1) angle type and (2) blade type.

PITON HAMMER: \'pē-ˌtän 'ham-ər\ A hammer designed for placing and removing pitons. It has a long lanyard for attaching to the climber's harness. It is usually carried in a belt holder.

POLYNA: Any sizeable nonlinear opening in ice that is found in the same region every year.

POOL: Any small area of water that is surrounded by ice other than a crack, polyna, lead, or thaw hole.

PORT: The left side of a boat when facing the bow; also a destination or harbor.

PRE-RIG: An assembly consisting of a spider, four locking carabineers used to clip the litter rails, a yoke, and the attendant's tie-ins.

PRESSURE DEMAND BREATHING APPARATUS: A mask used for SCBA in which the pressure on the inside of the facepiece is higher than the atmospheric pressure on the outside.

PRE-TENSIONING: To bring about a desired increase in tension in a rope system before a rope procedure begins.

PRIMARY ASCENDER: Ascenders used on the working line in the pulley system.

PROBING: A search method utilizing a pike pole, an oar, a boat hook, or other device to feel for persons or objects under water.

PROPORTIONER: A device that mixes the correct amount of foam with water.

PROTECTIVE CLOTHING: Clothing which guards a person from a specific environment.

PROTEIN FOAMS: Can be broken down into natural protein solids and used as fire fighting agent.

[illegible]: A hitch placed around the rescue or [illegible]ing rope that grips tightly on the rope when it is under the weight of the climber. A Prusik can be slid along the rope when not weighted; also called a soft ascender.

PRUSIK-MINDING-PULLEY: A pulley which is used in the belay or rachet position and due to its construction, automatically holds the Prusiks as the rope is pulled through.

PUDDLE: An accumulation of melted water on ice. It may be caused by melting snow.

PULMONARY: \'půl-mə-ˌner-ē\ Pertaining to the respiratory tract.

QUICK DRAW: A doubled runner used for lead climbing.

RCRA: Resource Conservation and Recovery Act.

RQ: Reportable quantity.

RACK: Anchoring devices and carabineers carried by the lead climber or rescuer in charge

of setting up anchors. The rack is worn over the shoulder.

RAPID-RELEASE PRUSIK: Prusik hitch tied with the double fishermen's bend joining the ends, located symmetrically from the outside of the wrap.

RAPPEL: To slide down a rope that is anchored at its upper end.

RAPPEL RACK: A device used to provide control when rappelling a long distance. Designed for caving initially, it works by friction created when multiple brake bars are placed in a series.

RAWL-DRIVE: A drill designed for boring holes by slightly twisting the drill bit in rock by repeated blows with a hammer. A stud-type bolt is placed in the hole upon which a hanger is placed.

REALIZED ULTIMATE REALITY PITON (RURP): A hatchet-shaped piton about the size of a postage stamp used to chop into extremely thin, shallow cracks.

RECOVERY: Recovering a body either during an attended or unattended evacuation on various types of terrain.

REFROZEN ICE: Ice that has frozen after it has melted.

RESCUE SLED: A rescue device designed to transport a victim or gear across snow, ice, or water.

RESCUE TEAM: A group of individuals trained to extricate victims in specific situations. e.g. river rescue, ice rescue, etc.

RESPIRATORY SYSTEM: The tubular and cavernous organs and structures by means of which pulmonary ventilation and gas exchange between ambient air and the blood are brought about.

RIDGED ICE: Ice haphazardly piled up by pressure in the form of ridges or walls.

RIGGING: A term referring to a rope-rescue system and the assembly thereof.

RING BUOY: \'riŋ 'bȯi\ A Type IV Coast Guard approved throwable water rescue device shaped like a doughnut.

RIVER CURRENT: The flow of water moving down the river's gradient.

RIVER LEFT: Facing downstream, the left side of a river.

RIVER READING: The skill of understanding the many patterns of moving water.

RIVER RIGHT: Facing downstream, the right side of a river.

ROLE ROTATION: Refers to a system of rotating the work load among litter bearers during transport of a victim in a flat carry or caterpillar pass.

ROPE RUNNER: A runner made from short sections of rope.

ROTATIONAL CAPSIZING FORCE: When a force acts against the keel and the side of the boat. A current differential can quickly capsize even the most stable boat.

ROTATIONAL TURNING FORCE: A force that occurs when a boat crosses from one current to another. This differential acts against the bow and stern in opposite directions throwing the boat off course unless the boater intends to go that way or is counting on the current to change the direction of the boat.

ROTTEN ICE: Old honeycombed ice in an advanced stage of disintegration. It may appear black because it is saturated with water.

ROUTE: An established or selected path of climbing on rock.

RUDDER: A device used for steering and maneuvering, usually flat sheet metal attached to a stern or rudder post; not necessary on outboard boats because the unit can be moved to change direction of thrust.

RUNNER: A short length of rope or webbing tied or sewn into a loop, used for many purposes in climbing or rescue procedures.

RUNNING A ROPE: To run the hand over a rope's outer sheath to feel for imperfections. Should be done each time a rope is stored after use.

RUNNING END: The end of a coil of rope which runs through the knot.

SAR: Search and Rescue.

SARA: Superfund Amendments and Reauthorization Act.

SCBA: Self-contained breathing apparatus.

SCUBA: Self-contained underwater breathing apparatus.

SLCD: Spring-loaded camming device such as a Friend, Camalot, three-cam unit, or slider.

SAFETY FACTOR: The ratio between a working load and the weakest link in a rope system.

SAFETY LINE: A line used by a rescuer to attach himself or herself to a safety or back-up rescuer.

SCREE: \'skrē\ A broad term used to define any number of conditions which may exist short on the vertical cliff. For example, a steep embankment, large talus block, or sloped boulder field.

SEARCH PATTERN: A method used to extensively cover an area when trying to locate a person or object.

SECOND: (Verb) The person who climbs second, usually with a rope belayed from above by the leader.

SECOND CLASS: A steep trail or hillside where the hands are not needed for stability.

SELF-BELAY: (Pseudo Belay) Any belay which is rendered by the person needing it, such, as in a rappel.

SELF-DRILLING BOLT: A type of hammer-driven bolt which has a splined female end capable of being driven into the rock without the use of a drill.

SELF-EQUALIZED: A method of taking two or more marginal anchors and equalizing them to distribute a load between them. If one fails, the system instantly adjusts to distribute the load equally to the remaining anchors.

SEMI-CIRCULAR SEARCH PATTERN: A search pattern utilizing the same techniques as the circular search pattern; however, a complete rotation is inhibited by some obstruction which forces the rescuers to travel in less than a complete 360 degree path.

SHALLOW ANGLE: A type of angle piton.

SHALLOW WATER: Water that is usually less than knee deep.

SHEATH: The outer filaments in a kernmantle rope that are woven tightly to make the sheath durable and unable to admit foreign matter. It is a different color from the core so that any brakes or flaw in the sheath is visible upon usual inspection. Also called a mantle.

SHEET BEND: A bend useful in rescue work and is closely relatedin structure to the bowline knot.

SHOCK LOAD: The load exerted on a system, anchor, or rope in the event of failure of any piece of equipment. A shock load is often several times more than original load weight because of the momentum force; called a dynamic load.

SHORING: Materials(usually wood) used to stabilize and support the walls in a trench or damaged structure for rescue purposes.

SIDE LOADING: Creation of an unsafe force upon a non-weight bearing area in a given piece of equipment. Usually refers to weight at the nonaxial sides or gate of a carabineer.

SITTING BELAY: A body belay given while the belayer is sitting on the ground.

SIX-CARABINEER BRAKE: A brake (friction) system comprised of a total of six carabineer positions.

SIZE-UP: The thought process built around evaluation of information available at the emergency scene, and the translation of that information into a plan of action to assure the successful execution and control of the incident.

SKYHOOK: A small hook used for aid climbing; can be used over tiny nubbins, ledges, or flakes.

SLING: A short length of rope or webbing threaded through a chock and tied in a loop used for attaching a carabineer and rope to the chock; also called a runner.

SLIP HALF-HITCH OR SLIP OVERHAND: To slip a knot is to reeve a bight for the final tuck instead of the end so that the knot may be untied by pulling on the end.

SNAGS: A protruding object which interferes with navigation.

SNOW ICE: An opaque or milky-looking, weak ice formed from the freezing of water-soaked snow.

SOFT ASCENDER: Any ascender, such as a Prusik, which is constructed of nylon or braid-on-braid rope generally of a smaller diameter than the rope to which it is being applied.

SOLO-RESCUE: A top-down method of rescuing a noninjured or slightly injured person from above using only one rescuer. Used mainly to rescue a free-climber or person who cannot downclimb from a cliff face. Also called a pick-off.

SPECTRA CORD: A strong accessory cord. Available in 5.5 with a test loop tensile strength of 4900 lbs.

SPEED GOVERNOR: A device to monitor the speed of an elevator via cable called the governor rope.

SPIDER: The section of a prerig which spans from the yoke to the litter rails; includes the locking carabineers at the rails. Spiders are sometimes adjustable to conform to a vertical or semi-vertical face.

SPONTANEOUS COMBUSTION: \'spānt-'tā-nē-əs kəm-'bəs-chən\ A sudden explosion.

SPOTTER: A person who communicates between the attendant below and the control on top during a high evacuation rescue.

STABILIZATION LINE: A rescue technique where a taut line is placed to assist a victim in keeping his or her head above the water until another extrication technique can be used; Most commonly used in a foot entrapment or vertical pinning situation on a river.

STACK: Uncoiling or unpacking a rope and starting at one end, stacking it in a loose pile. The bottom end is left off to the side so it can be clipped in. The top end can be used without danger of kinks or tangles once the stack is completed.

STANDING BELAY: Refers to the position of standing while giving a body belay. The belayer is always anchored and takes all slack out of the anchoring rope.

STANDING END or STANDING PART: The balance of a rope, excluding the running end, bights, and loops.

STANDING WAVES: Waves created by faster water current flowing into a slower current.

STATIC BELAY: A belay rendered which is not dynamic but has a better holding ability thus minimizes momentum.

STATIC LINE FERRY: Ferrying technique using a taut cable or rope perpendicular to the current, using the force of the water for propulsion.

STATIC LOAD: A constant load; opposite of dynamic or shock load.

STATION: A certain position in any evacuation where a particular function (i.e. lowering) is being performed by a rescuer(s). For example, a highline has two stations.

STERN: The after end or back of a boat.

STICHT PLATE: A metallic device through which a bight of the belay line is inserted and then clipped into a locking carabineer placed at the anchor. Its purpose is to ride loosely rides a few inches from this carabineer to either take in or pay out rope.

STOPPER: A wedge-shaped artificial chock. Each given size can be placed in two different size cracks using either the sides or the edges.

STRAINER: An object that water can flow through but traps solid objects like a boat or a person, i.e. fallen trees, brush, fencing, etc.

SUPERTAPE: A narrow, extremely strong type of webbing popular with free climbers because it is less bulky. Excellent for use as a quick draws. Not recommended for rescue.

SURFING: A maneuver where the boat is positioned on the upstream face of the wave and held stationary by the balanced forces of the river current and gravity.

SURGICAL CRICOTHYROTOMY: \'sər-ji-kəl \ Surgically maintaining an airway with a tube through the trachea.

SWAMP: To fill a boat with water.

TAGLINE: A rescue technique using a buoyant device (ring buoy, jim-buoy, or innertube) and two lines. The device is controlled by rescuers on shore holding the lines.

TALUS: \'tā-ləs\ A steep embankment made of large boulders that have fallen from a cliff above.

TECHNICAL EVACUATION: Any rope rescue which involves a steep or high-angle, highline, or pendulum evacuation. Steep-angle litter and highline evacuations are in-line, (parallel), to the working/belay ropes while pendulum evacuations are performed in the supine position.

TELPHER: \'tel-fər\ An electrically powered car that receives an current from an overhead cable from which it is suspended.

TENSIONLESS ANCHOR: A simple, yet strong anchor rope fastened to a tree or large boulder by making repeated wraps around the tree. Used in river and highline rescues where the tracklines must be pulled tight with a pulley system.

TETHERED BOAT/RAFT: Using ropes to control the motion of a boat or raft on moving water. It may be shore-based with one to four ropes in use, or highline-based where the main control preventing downstream movement is provided by support from a highline rack-line strung across the river.

THAW HOLE: A vertical hole formed when surface holes melt through to the underlying water; may be caused by a warm spring thaw or similar phenomena present in the water.

THERMAL EXPANSION: Where a solid, fluid, or gas changes volume due to temperature change.

THERMOCLINE: \'thər-mə-ˌklīn\ The border between layers of water of different temperature.

THIRD CLASS: A route or climb involving the use of hands for balance. A rope may be advisable in certain circumstances. Also called CLASS THREE.

THREE-CAM UNIT: A thin-crack anchoring device having; part of the spring-loaded camming device group; one axle, and three cams.

THREE-LOOP BOWLINE: A bowline knot useful for multi-point anchors. (self-equalizing)

THROW BAG: A small bag that holds polypropylene rope and a disc of buoyant material; used for river rescue.

THUNDERSTUD: A type of expansion bolt used in rock for attaching a hanger; not suitable for soft sandstone.

TIE-IN: The physical attachment of the rescuer to some other anchor, litter, or belay rope.

TOOLS (FORCIBLE ENTRY): Axes, bolt cutters, prying tools, power tools, battering ram, and lock pullers used to gain entry to a locked structure.

TOP BELAY: A separate rope belay independent from the system or rappel rope and usually given by a separate person.

TOP ROPE: A top belay set up by a climbing party so that a climber does have to place intermediate anchor points during the climbs.

TORNADO WARNING: Means a tornado has actually been sighted or indicated on radar.

TORNADO WATCH: Means a tornado is expected to develop.

TRACKLINE: Ropes stretched between two points tightly over a river, chasm, or otherwise impassible gap. A litter and attendant, supplies, rescuers, or various loads may move back and forth over the tracklines.

TRACKLINE PULLEY: The main pulley which rolls along the trackline and attaches directly to the yoke in an evacuation requiring use of a litter. It is either a large knot-passing pulley or a double-sided pulley if using two tracklines.

TRANSOM: \'tran(t)-səm\ The flat, rear wall of a watercraft where an outboard motor is mount[illegible].

TREAD DIAMETER: The width at the narrowest portion of a pulley's sheave (grooved wheel) where a rope actually presses on it.

TRIAGE: \'trē-'äzh\ Sorting of victims to determine priority of need and proper place of treatment.

TRI-CAMS: A type of camming; passive chock.

TUBE CHOCK: A cylindrical slip rope cam device use in off width size cracks.

TUBER: A belay device useful for climbing loads.

TWO-LOOP BOWLINE: A bowline knot useful in self-equalizing anchors. Both loops can be the

same length of readily readjusted to dissimilar lengths.

TYROLEAN: \'tə-'rō-lē-ən\ A primitive method used by climbers to cross a chasm. The person lays on top of the tightly stretched rope or hangs below with one leg crossed over the rope and pulls the body across the rope.

UEL: Upper Explosive Limit.

UN: United Nations.

UPSTREAM: Opposing direction from which a river flows.

UPSTREAM "V": Rippling effect on the surface of the water formed in the shape of an upstream "V"; caused by objects at or near the surface.

UTILITY ROPE: A rope used to make a barricade, or for towing and/or, securing and unstable vehicle.

VECTOR: A graphic symbol (usually an arrow drawn on paper) representing two kinds of information. Common in rescue work is the FORCE VECTOR where the direction of the arrow indicates the direction of force and the length of the arrow indicates the magnitude to some convenient scale. Vectors are added by placing them tail to head until all are used and the RESULTANT VECTOR representing the result of all the acting forces, will be found with it's tail on the first vectors tail and it's head on the last vectors head.

VELOCITY: Speed.

VERTICAL EVACUATION: See HIGH-ANGLE EVACUATION.

VOID: An open area formed from a collapsed building where there is little debris and a victim could be found and rescued.

WEBBING: A strong flat strapping 1/2" to 3", made from nylon.

WET SUIT: Protective clothing designed to trap an insulating layer of water to provide warmth.

WHALE TAIL: A friction device constructed from a solid piece of machined alloy with a number of slits cut in it. A rope is run back and forth through the slots to increase or decrease the amount of friction. (Not to be confused with the RAPPEL RACK.)

WHIPPING: A binding made by tightly wrapping a rope or chord around the object to be secured so that the final end can be tucked through a bight in the starting end (laid against the object before the wraps begin) and pulled under the wraps with an adjusted suspension system.

WHISTLE COMMAND: A form of communication useful in river rescue, windy areas, or where adverse conditions prevail. Only one person employs whistle commands. Standard commands: One-stop; two-up rope; three-down rope.

WINDWARD: Situated on the side closest to the wind; opposite of leeward.

WORKING ROPE: The rope in a steep and high-angle evacuation which is actually handling the load; also called main line.

YOKE: The point at which the litter spiders attach to the working or belay lines in a high-angle evacuation, however; the same applies in a pendulum or highline where a single point litter spider is used. The yoke may be two back-to-back steel locking carabineers or in the case of a pre-rig, it may be a large figure-eight or solid pear ring.

Z RIG: A 3:1 pulley system so named because of the configuration that the working rope makes.

APPENDIX "A"

COMPUTER PROGRAMS AVAILABLE FOR HAZARDOUS MATERIALS

"CAMEO"

Terms and Conditions

Recipient agrees to the following conditions:

A. **USE AND DISTRIBUTION RESTRICTIONS.** The CAMEO® chemical database is available at no cost from the U.S. Government. The recipient may duplicate one original and one backup copy of the media provided. The recipient shall not distribute, electronically or by any other media, any portion of CAMEO® to individuals or organizations not part of the recipient's organization. **Original media provided by the U.S. Government must be returned within five working days.**

Certain response information contained in CAMEO® and marked © AAR, 1986, has been supplied by, and is the property of the Association of American Railroads. CAS Registry numbers, CAS synonyms, and CAS molecular formulas have been supplied by, and are the property of the Chemical Abstract Service of the American Chemical Society. NFPA ratings have been supplied by, and are the property of the National Fire Protection Association. AAR, CAS, and NFPA data shall not be duplicated by the recipient, except as indicated above, without written permission from AAR, CAS, or NFPA.

The recipient shall honor all disclaimers and other limits of liability associated with those organizations that have provided data in the compilation of the CAMEO® chemical database.

B. **LIMITATION OF LIABILITY.** While AAR, CAS, NFPA, and the United States Government have used their best efforts to deliver complete and accurate data incorporated into CAMEO®, AAR, CAS, AND THE UNITED STATES GOVERNMENT DO NOT WARRANT ACCURACY OR COMPLETENESS, ARE NOT RESPONSIBLE FOR ERRORS AND OMISSIONS, AND ARE NOT LIABLE FOR ANY DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES FLOWING FROM THE RECIPIENT'S USE OF CAMEO®

C. **INDEMNIFICATION.** The recipient shall indemnify and save harmless the United States, its agents and employees against any and all loss, damage, claim, or liability whatsoever, due to personal injury or death, or damage to property of others directly or indirectly due to the use by the recipient of the CAMEO® program, or any other act or omission of the recipient, including failure to comply with the provision of these restrictions.

D. **EDITING.** Any unauthorized editing or alteration of CAMEO® chemical data or information provided by the U.S. Government will result in the termination of the agreement between the recipient and the U.S. Government. Termination shall be at the complete discretion of the United States Government, acting through the NOAA Hazardous Materials Response Branch. Upon receipt of a notice of termination, the recipient shall immediately return all CAMEO® information to the U.S. Government, including all documents and all copies of software containing CAMEO® information, which copies will be returned to the recipient after deletion of the information.

E. **MAINTENANCE.** The recipient shall perform CAMEO® maintenance necessary to update the recipient's CAMEO® chemical database, following the delivery of updated data by the U.S. Government.

CAMEO is a trademark of the U.S. Government.

"CHRIS"

The Chemical Hazard Response Information System was developed by the US Coast Guard. The information within the system was gathered from a variety of sources. The primary function of the system is to provide emergency information to spill-response personnel for the identification, containment, and disposal of hazardous materials that are frequently transported by water. However, the system contains such a wide range of chemical information that it is of interest to almost anyone concerned with chemicals. As of this writing (Fall, 1986), 1,016 chemicals are covered in the system.

The automated version of the system — called CHRIS — is available online through the Chemical Information System (The CIS), 7215 York Road, Baltimore, MD 21212 USA. This manual, however, deals with microCHRIS, the version of the system prepared for use on a stand-alone basis on an IBM PC or compatible. MicroCHRIS covers all the chemical substances covered by CHRIS, and it can be used in very much the same way as the full-fledged online system. The micro system was created by Fein-Marquart Associates, Inc., 7215 York Road, Baltimore, MD 21212 USA, parent company of the firm (Chemical Information Systems, Inc.) that makes CHRIS available to the public through The CIS.

"OHM/TADS"

Introduction

The Oil and Hazardous Materials/Technical Assistance Data System was developed by the US Environmental Protection Agency (EPA). The information within the system was gathered from the open literature. The primary function of the system is to provide emergency information to spill-response personnel for the identification, containment, and disposal of oil and hazardous materials. However, the system contains such a wide range of chemical information that it is of interest to almost anyone concerned with chemicals.

As of this writing (mid-1986), 1,402 chemicals are covered in the system; the chemicals selected for coverage are those most prone — according to their spill histories, volume of production, and toxicity — to represent a serious problem in the event of an accident.

The automated version of the system — called OHM/TADS — is available online through the Chemical Information System (The CIS), 7215 York Road, Baltimore, MD 21212 USA. This manual, however, deals with microOHM/TADS, the version of the system prepared for use on a stand-alone basis on an IBM PC or compatible. MicroOHM/TADS covers all the chemical substances covered by OHM/TADS, and it can be used in very much the same way as the full-fledged online system. The micro system was created by Fein-Marquart Associates, Inc., 7215 York Road, Baltimore, MD 21212 USA, parent company of the firm (Chemical Information Systems, Inc.) that makes OHM/TADS available to the public through The CIS.

H I T

Hazard Information Transmission

CHEMTREC, through its Hazard Information Transmission (HIT) program, has expanded its services to meet the needs of the emergency response personnel. Through HIT a hard copy of the same chemical-specific response information available to CHEMTREC Communicators is transmitted directly to the incident scene. That information was previously provided verbally by phone. There are two distinct advantages of the HIT program—

- the information can be transmitted faster - usually within five minutes.
- there is less chance of misinterpretation of the response information.

One of the distinct advantages of CHEMTREC has been the capability of notifying the shipper and getting him involved in providing additional advice and assistance. CHEMTREC will continue to provide this service to all callers to the hotline, including HIT participants.

Eligibility

Registration in the HIT program is open to the fire services, police and sheriffs departments, and emergency medical services. Eligibility of organizations other than the above will be limited to those groups that actually respond to chemical emergencies, and are involved in the actual containment procedures. These would include chemical industry emergency response teams, and governmental agencies. Such applicants will be individually reviewed to determine their eligibility prior to registration. As an extension of CHEMTREC, the service will be free requiring users to invest only in a modem, printer, pc, or other device to capture the transmission, and a data phone number (a single phone line is necessary to receive transmissions). In many cases you may find that you already have part or all of the appropriate equipment.

That means information on trade-name products, commercial products, and generic product categories, such as for polyurethane resins, elastomer compounds, fatty alcohols will not be available for hard copy transmissions. However, any available information for these type products will still be provided verbally from CHEMTREC's library of 90,000 material safety data sheets. Furthermore, transmissions will be approved ONLY for emergency situations. "Informational" requests for transmissions will not be honored.

For More Information

Questions regarding the HIT program should be sent to:

R. Jay Chezem
Manager, CHEMTREC/CHEMNET
c/o Chemical Manufacturers Association
2501 M Street, N.W.
Washington, DC 20037
Telephone: 202-887-1255

CERIS (Chemical Emergency Response Information System) is the computer-based version of the Association of American Railroads' (AAR) publication, *Emergency Handling of Hazardous Materials in Surface Transportation*, AAR's standard reference book, in use for more than 20 years.

CERIS is designed to support the growing demand in the emergency services industry for affordable, rapid access to specific emergency response information.

CERIS provides the emergency responder with detailed information for handling chemical emergencies, including procedures for firefighting, evacuation, environmental protection, and first aid. The program covers more than 3,700 commonly transported chemicals including all hazardous materials and hazardous wastes regulated by the U.S. Department of Transportation (DOT). The information contained in CERIS is under constant review and updated on a regular basis.

CERIS offers users access to emergency response information for each hazardous material in three ways: by chemical name, by the DOT four-digit United Nations identification number, and by the seven-digit Standard Transportation Commodity Code number.

Users need not know the exact spelling of a chemical name to obtain information through CERIS. A "thumb-through" feature displays an index of names as the initial letters are typed, helping to pinpoint the specific item. A second feature, "mark-the-place," allows users to mark several locations in the database and move between them with simple keystrokes.

CERIS operates on 100% IBM compatible micro computers on MS ®-DOS 2.0 or higher. Priced at $495, CERIS is distributed by Management Logistics International, Ltd. Persons making pre-paid orders by June will receive 1988 system updates free of charge. For further information and orders, contact Gary A. Hill, MLI, Ltd., 1401 Wilson Boulevard, Arlington, Virginia 22209, or call 703/522-4550.

The attached sample screens display menus used in the information look-up process in CERIS.

The HMIX is a "Hazardous Materials Information Clearinghouse" and "Exchange System" designed to provide Federal, state, local and private-sector organizations with a means of sharing valuable and timely information about the prevention of, preparation for, and mitigation of hazardous materials emergencies. The HMIX services as a central source of reliable information to prepare for potentially dangerous occurrences. It is not intended, however, to provide assistance during an actual emergency.

HOW THE SYSTEM WORKS

Information is available in two ways:

(1) Through an electronic bulletin board. If you have a personal computer, a modem (300, 1200, or 2400 baud), and any communication software (set at no parity, 8 data bits and 1 stop), you can access the bulletin board by dialing commercial (312) 972-3275 or FTS 972-3275. This service is FREE; the caller pays only for long-distance phone charges. A user is allotted 60 minutes of access time per day, which can be used at one time or through a series of calls. The bulletin board is available 24 hours a day, seven days a week.

(2) through a toll-free telephone call. If you have no computer capability or need help using the electronic bulletin board, dial toll free 1-800-PLANFOR (752-6367). Illinois residents dial 1-800-367-9592. An information systems technician is available to provide assistance Monday through Friday, from 8:30 a.m. to 4:30 p.m. Central Time.

Bulletin Board Features

The bulletin board is completely USER FRIENDLY! That is, you always see a list of acceptable commands and a brief explanation of each. The Bulletin Board includes a "bulletin listing" that provides up-to-date items of immediate interest (e.g., current rulemaking action) and seven "information conferences" that contain information on the following topics:

- Federal Training Courses
- Public and private Sector HAZMAT Information
- Calendar of Conferences
- Instructional Material and Literature Listing
- Toll-free (800) Numbers and On-line Data Bases
- Laws and Regulations
- Contacts

Agency-Specific Communication Conferences:

- Department of Transportation
- Federal Emergency Management Agency

Comments, Suggestions and Information

In order for the HMIX to be as informative as possible, your input is essential! We encourage you to supply information to us directly by using the "Comment" command or "Upload Function" of the bulletin board, or by writing to the HMIX Coordinator at:

Federal Emergency Management Agency
State and Local Programs Support Directorate
Technological Hazards Division
500 C Street, S.W.
Washington, D.C. 20472
(202) 646-3525

or

Research and Special Programs Administration
Office of Hazardous Materials Transportation
Federal, State, and Private Sector Initiatives Division
400 Seventh Street, S.W., DHM-52, Room 8434
Washington, D.C. 20590
(202) 366-4900

A "Users Guide" is available and may be obtained by calling the toll-free telephone number or one of the HMIX Coordinators.

OTHER TECHNICAL ASSISTANCE

ACS Journals On-line: Full text of Chemistry Journals. Contact through the Bibliographic Retrieval System (BRS)

Air Toxics Clearing House (EPA): Bibliographic and Information Search for Toxic Air Pollutants. Contact vis NTIS or Dave Patrick or Karen L. Blanchard at 919-541-9919.

CAS On-Line (CA Search): Chemistry Reference. Contact via BRS, DIALOG, or SDC.

Chemical Evaluation Search and Retrieval System (CESARS): Text/Numeric listing of chemical properties, environmental fate, and toxicology. Access via CIS or ICI.

Chemical Exposure: bibliographic - Effects of Contaminants on animals and humans. Access via DIALOG.

Chemical Exposure: Chemicals in human tissues and fluids: Toxicology. Access via DIALOG or U.S. DOE (RECON).

Chemical Information System (CIS): Bibliographic - Chemistry, Access via CIS, inc.

Chemical Regulations and Guidelines System (CRGS): Bibliographic-Regulations. Access via DIALOG.

Chemline: Chemical Dictionary. Access via national Library of Medicine or via DIALOG (under CHEMNAME) or via SDC (under CHEMDEX)

Clinical Toxicology of Commercial Products (CTCP): Toxicology. Access via CIS.

Environmental Fate Data Bases: Chemistry Properties; Environment; Toxicology. Access under names DATALOG, CHEMFATE, and BIOLOG via Syracuse Research Corporation.

Hazardline: Chemistry properties, Environment, Toxicology, Access via BRS, Executive Telecom System, Inc., or Mead Data Central.

Hazardous Materials Information Exchange: Sponsored by FEMA and DOT, this system is accessed by computer by calling 312-972-3275 or FTS 972-3275. Modem settings for 300/1200 baud, word length 8, no parity, and one stop bit. (Voice line 800-752-6367)

Hazardous Substances Data Bank: Chemical Data, Access via national Library of Medicine.

Heilbron: Chemistry- properties. Access via DIALOG.

ICI, ICIS, and CIS: Data base access via vendor

Integrated Risk Information System (IRIS): Search system, Chemical risk characteristics, EPA) contact via Mary Wigginton, FTS phone at 8-226-7811 or 202-382-7315

AMA/NET: News and information) health and education, Access via SoftSearch, Inc.

National Environmental Data Referral Service (NEDRES): Bibliographic-Environmental information systems and services directories. Access via BRS.

National Pesticide Information Retrieval System (NPIRS): Non-bibliographic) pesticide chemical and registration data. Access via Martin Marietta Data Systems.

National Technical Information Service (NTIS): Bibliographic and full text, science and technology. Access via BRS, DIALOG, SDC, and Mead Data Central.

NIOSHTIC; Bibliographic Toxicology. Access via NIOSH.

Occupational Health Services Materials Safety Data Sheets (OHS-MSDS): Text/Numeric- Chemical and safety information. Access via Occupational Health Services (OHS), Inc.

Oil and Hazardous Materials- Technical Assistance Data System (OHM-TADS): Environmental/toxicology. Access via CIS or ICI

Registry Nomenclature and Structure Service (RNSS): Chemistry. Access via DIALOG, SDC, STN International.

Registry of Toxic Effects of Chemical Substances (RTECS): Toxicology. Accessed via CIS.

Scientific Parameters for Health and the Environment, Retrieval and Estimation (SPHERE): U.S. EPA, Biomedicine, Chemistry properties, environment, toxicology. Access via CIS or ICI

Structure and Nomenclature Search System (SANSS): Chemical Properties. Access via CIS or ICI

Toxicology Data Bank: Toxicology. Access via national Library of Medicine, pesticides, toxicology. Access via national Library of Medicine

TOXNET: Toxicology. Access via national Library of Medicine (NLM)

RSCA Initial Inventory: Chemical industry, toxicology, U.S. EPA, access via DIALOG.

TSCA Plus: Chemical identification, manufacturing, and use, U.S. EPA, access via SDC information services.

Two data sheets are included here for you to become familiar with, one is a blank format designed for use in the emergency situations where it is necessary to develop your own information in the filed. The other is a specific data sheet with the information filled in on a randomly picked chemical to familiarize you with the kinds of information you can expect to see. Appendix (A) is included which lists some of the more common health terms you might encounter.

APPENDIX "B"

HAZARDOUS MATERIALS RESOURCES

PHONE LIST OF HAZARDOUS MATERIALS RESOURCES

ACFX RAIL CAR MFGR. 314-724-7850

ATLANTIC AREA STRIKE TEAM U.S.C.G. (AAST) 205-694-6601
205-694-6611
205-694-6620

AGENCY FOR TOXIC SUBSTANCES DISEASE REG. ..... 404-452-4100 ATLANTA
CENTERS FOR DISEASE CONTROL ..... 312-886-9293 CHICAGO
SHAMLEE 28 S., ROOM 9
ATLANTA, GA. 30333

AMERICAN CONFERENCE OF GOVERNMENTAL 513-661-7881
INDUSTRIAL HYGIENISTS
6500 GLENWAY AVENUE, BUILDING D-5
CINCINNATI, OH. 44311-1087

AMERICAN CYANAMID 201-835-3100

AMERICAN INDUSTRIAL HYGIENE ASSOCIATION 216-762-7294
475 WOLF LEDGES PARKWAY
AKRON, OHIO 44311-1087

AMERICAN INSURANCE ASSOCIATION (AIA) 212-533-4400
(NATIONAL BOARD OF FIRE UNDERWRITERS)
ENGINEERING AND SAFETY SERVICE
85 JOHN STREET
NEW YORK, NY. 10038

AMERICAN NATIONAL STANDARDS INSTITUTE 212-354-3300
(ANSI)
1430 BROADWAY
NEW YORK, NY. 10018

AMERICAN PETROLEUM INSTITUTE (API) 202-682-8000
1220 L STREET N.W.
9TH FLOOR
WASHINGTON, DC 20005

AMERICAN SOCIETY OF MECHANICAL ENGINEERS 212-644-7722
(ASME)
UNITED ENGINEERING CENTER
345 EAST 47TH STREET
NEW YORK, NY 10017

ASHLAND CHEMICAL COMPANY 614-276-6143
3849 FISHER ROAD
COLUMBUS, OH 43228

ASHLAND OIL 614-276-6143

ASSOCIATION OF AMERICAN RAILROADS (AAR) 202-639-2100
50 F STREET N.W.
WASHINGTON, DC 20001

ASSOCIATION OF AMERICAN RAILROADS (AAR) 312-939-0770
59 EAST VAN BUREN STREET
CHICAGO, IL 60650

BUREAU OF EXPLOSIVES, ... 202-639-2222
AMERICAN ASSOCIATION OF RAILROADS 202-293-4048
1920 L STREET, N.W.
WASHINGTON, DC 20036

CENTER FOR DISEASE CONTROL 404-633-5313
ATLANTA, GA

CHEMICAL MANUFACTURER'S ASSOCIATION 202-877-1100
2501 M. STREET N.W.
WASHINGTON, DC 20037

CHEMTREC 800-424-9300
WASHINGTON, DC

THE CHLORINE INSTITUTE 212-682-4324
342 MADISON AVENUE
NEW YORK, NY 10017

THE COMPRESSED GAS ASSOCIATION, INC. (CGA) 212-354-1130
500 FIFTH AVENUE
NEW YORK, NY 10036

DEPARTMENT OF ENERGY (NORMAL DUTY) 312-972-4800
(AFTER HOURS) 312-972-5731

DOW CHEMICAL COMPANY 517-636-4400
MIDLAND, MI 48640

DUPONT COMPANY 302-774-7500
1007 MARKET STREET
WILMINGTON, DE 19898

FACTORY MUTUAL ENGINEERING CORP. LAB 617-762-4300
1150 BOSTON-PROVIDENCE TURNPIKE
NORWOOD, MA. 02062

THE FERTILIZER INSTITUTE (TFI) 202-861-4900
1015 18TH STREET, N.W.
WASHINGTON, DC 20036

GATX RAIL CAR MANUFACTURER 312-621-6200

HARSHAW CHEMICAL ..... 216-721-8300 (START)

HOOKER CHEMICAL 716-278-7000

HAZARDOUS MATERIALS NEWSLETTER HOTLINE 802-479-2307

INSTITUTE OF MAKERS OF EXPLOSIVES (IME) 212-986-6920
420 LEXINGTON AVENUE
NEW YORK, NY 10017

J.T. BAKER CHEMICAL COMPANY 201-859-2151
PHILLIPSBURG, NY 08856

KERR-McGEE CHEMICAL CORP. 405-270-1313
KERR-McGEE CENTER
OKLAHOMA CITY, OK 73125

MALLINCKRODF, INC. 314-895-0123
P.O. BOX 5439
ST. LOUIS, MO. 63147

MANUFACTURING CHEMISTS ASSOCIATION, INC. 202-483-6126
1825 CONNECTICUT AVENUE N.W.
WASHINGTON, DC 20009

MONSANTO 314-694-1000

NATIONAL ANIMAL POISON CONTROL 217-333-3611

NATIONAL BUREAU OF STANDARDS 301-921-1000
U.S. DEPARTMENT OF COMMERCE
WASHINGTON, DC 20234

NATIONAL CHEMICAL RESPONSE INFORMATION CENTER 202-887-1216

NATIONAL FIRE PROTECTION ASSOCIATION 800-344-3555
BATTERYMARCH PARK 617-770-3000
QUINCY, MA 02269

NATIONAL INSTITUTE FOR OCCUPATIONAL 513-684-8302
SAFETY AND HEALTH
DIVISION OF TECHNICAL SERVICES
46765 COLUMBIA PARKWAY
CINCINNATI, OH 45226

NATIONAL RESPONSE CENTER (USCG & USEPA) 800-424-8802

NUCLEAR REGULATORY COMMISSION 312-790-5500

NATIONAL SAFETY COUNCIL 312-527-4800
444 NORTH MICHIGAN STREET
CHICAGO, IL 60611

NATIONAL TANK TRUCK CARRIERS, INC. 202-797-5426
1616 P STREET
WASHINGTON, DC 20036

NATIONAL TRANSPORTATION SAFETY BOARD 202-655-4000
800 INDEPENDENCE AVENUE
WASHINGTON, DC 20594

NATX RAIL CAR MANUFACTURER 312-648-4000

OCCUPATIONAL SAFETY AND HEALTH ADMIN. 202-523-9700
U.S.DEPARTMENT OF LABOR
WASHINGTON, DC

OHIO STATE FIRE MARSHAL,
HAZARDOUS MATERIALS BUREAU 24 HR OHIO 800-282-1927
614-864-5510

OIL AND HAZARDOUS MATERIAL TECHNICAL 202-245-3045
ASSISTANCE DATA SYSTEM

OLIN CHEMICAL.....203-356-2000

SUPERINTENDENT OF DOCUMENTS.....202-783-3238
U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON, DC 20402

TEXAS TECH. PESTICIDE HOTLINE.....800-858-7378

UNDERWRITERS' LABORATORIES.....312-642-6969 207

UNION CARBIDE CORPORATION.....201-753-5800
LINDE DIVISION
51 CRAGWOOD ROAD
SOUTH PLAINFIELD, NJ 07080

UNIVERSITY OF SOUTH CAROLINA, POISON CONTROL CENTER.....800-792-4201
800-845-7633

U.S. DEPARTMENT OF DEFENSE.....505-264-4667 NUCLEAR

U.S. DEPARTMENT OF ENERGY.....202-252-5000
WASHINGTON, DC 20545

U.S DEPARTMENT OF TRANSPORTATION.....202-366-4555
MATERIALS TRANSPORTATION BUREAU
OFFICE OF HAZARDOUS MATERIALS OPERATIONS
400 7TH STREET S.W.
WASHINGTON, DC 20590

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA)

The United States Environmental Protection Agency (EPA) was created in 1970 and given the responsibilities for the establishment and enforcement of environmental standards as specified in statutes enacted by Congress and was directed to prevent as well as clean up the pollution which threatens human health and disfigures our land.

EPA Regions Office & Telephone

EPA Region 1
2303, J.F. Kennedy Bldg.
Boston, MA 02203 617-223-7210

EPA Region 2
Rm 1005, 26 Federal Plaza
New York, NY 10007 212-264-2525

EPA Region 3
6th & Walnut Streets
Philadelphia, PA 19106 215-597-9814

EPA Region 4
245 Courtland St., N.E.
Atlanta, GA 30308 404-881-4727

EPA Region 5
230 S. Dearborn St.
Chicago, IL 60604 312-353-2000

EPA Region 6
1201 Elm Street
Dallas, TX 75270 214-749-1962

EPA Region 7
Rm 249, 1735 Baltimore Ave.
Kansas City, MO 64108 816-374-5493

EPA Region 8
Suite 900, 1860 Lincoln St.
Denver, CO 80203 303-837-3895

EPA Region 9
215 Fremont Street
San Francisco, CA 94105 415-556-2320

EPA Region 10
1200 Sixth Avenue
Seattle, WA 98101 206-442-1220

States Covered by Region

Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

New York, New Jersey, Virgin Islands, Puerto Rico

Pennsylvania, Maryland, Delaware, Virginia, West Virginia, D.C.

Georgia, Florida, Alabama, Kentucky, Mississippi, North Carolina, South Carolina

Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin

Texas, Arkansas, Louisiana, New Mexico, Oklahoma

Kansas, Iowa, Missouri, Nebraska

Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming

Nevada, American Samoa, Guam, Trust Territories of Pacific Isles, Wake Isle, California, Arizona, Hawaii

Washington, Alaska, Oregon, Idaho

U.S. DEPARTMENT OF LABOR REGIONAL OFFICES OF OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

The Occupational Safety and Health Act of 1970 was passed by Congress "...to assure as far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources."

For additional information contact:

REGION I (CT, ME, NH, RI, VT)
18 OLIVER STREET
BOSTON, MA 02110
Telephone: (617) 223-6712

REGION II (NY, NJ, PR, VI, CZ)
ROOM 3445 1 ASTOR PLAZA
1515 BROADWAY
NEW YORK, NY 10036
Telephone: (212) 971-5941

REGION III (DE, DC, MD, PA, VA, WV)
15220 GATEWAY CENTER
3535 MARKET STREET
PHILADELPHIA, PA. 19104
Telephone: (215) 596-1201

REGION IV (AL, FL, GA, KY, MS, NC, SC, TN)
1375 PEACHTREE STREET, N.E.
SUITE 587
ATLANTA, GA 30309
Telephone: (404) 881-3573

REGION V (IL, IN, MN, MI, OH, WI)
230 DEARBORN STREET, 32nd FLOOR
CHICAGO, IL 60604
Telephone: (312) 353-2220

REGION VI (AR, LA, NM, OK, TX)
555 GRIFFIN SQUARE, ROOM 602
DALLAS, TX 75202
Telephone: (214) 749-2477

REGION VII (IA, KS, MO, NE)
911 WALNUT STREET
ROOM 3000
KANSAS CITY, MO 64106
Telephone: (816) 374-5861

REGION VIII (CO, MT, ND, SD, UT, WY)
FEDERAL BLDG., ROOM 15010
1961 STOUT STREET
DENVER, CO 80202
Telephone: (303) 837-3883

REGION IX (CA, AZ, NV, HI)
VOX 36017
450 GOLDEN GATE AVENUE
SAN FRANCISCO, CA 94102
Telephone: (415) 556-0586

REGION X (AK, ID, OR, WA)
FEDERAL OFFICE BLDG., ROOM 6048
909 FIRST AVENUE
SEATTLE, WA 98174
Telephone: (206) 442-5930

APPENDIX "C"

HAZARDOUS MATERIAL REFERENCE SOURCES AND BOOKS

HAZARDOUS MATERIALS REFERENCE SOURCES AND BOOKS

Accident Reports, National Transportation Safety Board, Washington, DC 20591

Air Freight Guide for Hazardous Materials, Flying Tiger Airlines

American National Standard for the Storage and Handling of Anhydrous Ammonia, American National Standards Institute, Inc., 1430 Broadway, New York, NY 10013

American Table of distances, Institute of Makers of Explosives

American Trucking Association, Department of Safety, Handling Hazardous Materials, A Guide for the Proper Handling and Transportation of Hazardous Materials by Motor Carrier, Department of Safety, Washington, DC 1977

Analysis of the Safety of Transportation of Hazardous Materials on the Navigable Waters of the United States, NTSB-MSS-072-2

Basic Classification of Flammable and Combustible Liquids, Pamphlet 321, National Fire Protection Association, Boston, MA 1973

Basic Training Course for Emergency Medical Technicians, U.S. Government Printing Office, Washington, DC, 1977

Cargo Security Handbook for Shippers and Receiver, DOT Cargo Theft and Organized Crime, DOT and Department of Justice Case Histories of Accidents in the Chemical Industry, Manufacturing Chemists Association, 1825 Connecticut Ave., N.W., Washington, DC 20009

Chain Reaction- By Mistake, The Evening Bulletin, Providence, Rhode Island

CFX Rail Car Service bulletins, Shipper Car Line Division, ACF Industries, Inc., 620 N. 2nd St., St. Charles, Missouri 63301

Chemical Data Guide for Bulk Shipment by Water, U.S. Coast Guard, Superintendent of Documents, U.S. Government Printing Office, Washington, CD. 20402

Chemical Data Sheets, Chemical Cards and Water Information Cards, Manufacturing Chemists Association, 1825 Connecticut Ave., NW, Washington, DC 20009

Chemical Hazards Response Information System (CHRIS Manuals) 4 books), U.S. Coast Guard 400 7th St., SW, Washington, DC 20590

Chemical Regulation Reporter, The Bureau of National Affairs, Inc., Washington DC

Chemical Safety Slide Rule, National Safety Council, 425, N. Michigan Ave., Chicago, Illinois 60611

Chemistry of Hazardous Materials, Eugene Meyer, Prentice-Hall, Inc. Englewood Cliffs, NJ 07632

Chlorine Manual, Chlorine Institute, 325 Madison Avenue, New York, NY

Code of Federal Regulations (29 CFR 1910) General Industry Safety and Health Standards OSHA 2206, Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402

Code of Federal Regulations, (CFR 49) Transportation Parts 100 to 199, Superintendent of Documents, U.S. Government Printing Office, Washington, DC. 20402

Condensed Chemical Dictionary, The Sixth Edition-Reinhold, Reinhold Publishing Co., New York, NY 10602

Control of Hazardous Materials Spills, Proceedings of the 1978 National Conference Control of Hazardous Materials Spills, Information Transfer, Inc. 1160 Rockville Pike Rockville, MD 28052

Control of Spillage of Hazardous Polluting Substances, Federal Water Quality Administration, U.S. Department of the Interior, Dawson, Shuchrow, Swirt

Dangerous Properties of Industrial Materials, Irving Sax, Author, Reinhold Publishing Corp., New York, NY 10602

Debris and Hazardous Material Cleanup and Control, Washington State Patrol

D.E.C.I.D.E., in Hazardous Materials Emergencies, Ludwig Benner, Fire Journal 69, July 1975

Directory of Poison Control Centers, U.S. Department of Health, Education and Welfare, Food and Drug Administration, Bureau of Product Safety, Division of Hazardous Substances and Poison Control, Washington DC

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